



Factory Management Institute

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Factory Management

Volume 3 – V2.4

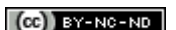
Policy Control (& II)

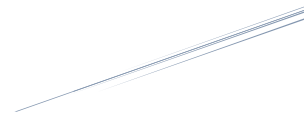
Policy Statement and Vision

Koichi Kimura, Japan-2017

www.factorymanagementinstitute.com

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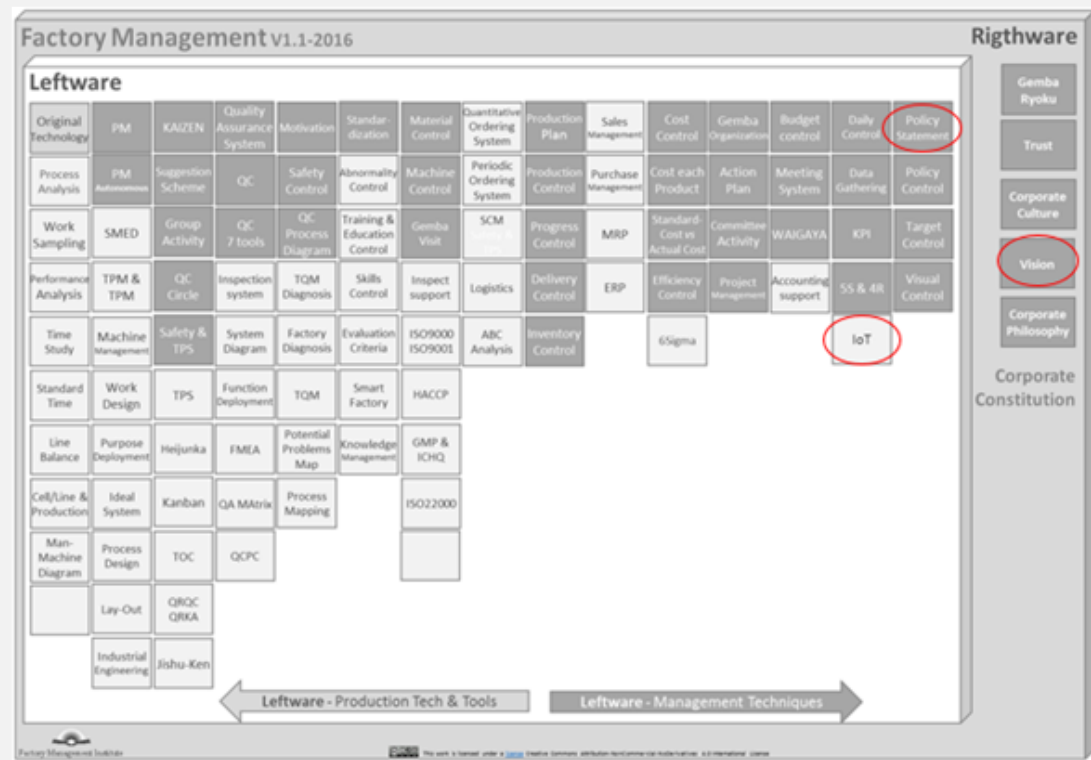
I. Introduction

Dear Friends;

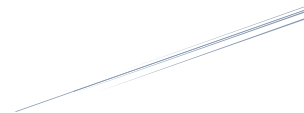
In the Factory Management, Volume 2, I wrote the theme of Policy Control and I described the great relevance of annual policy as the backbone of factory management.

And present lecture is the continuation of the Policy Control.

Also, I would write the theme of Vision which should be related to the policy statement deeply. And when writing Vision, I would explain the issue of IoT (Internet of Things) which is one theme of Factory Management Frame.



Koichi Kimura



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II. Issues from previous readings

1) The needed of budget making

When I made a lecture in a company he mentioned the doubt about the necessity of the annual budget because the market situation and business circumstances are very much changeable rapidly.

Also it is not possible to expect an absolute forecast. Then their opinion is that there is no meaning to make the annual plan and budget.

I understand such doubt and very changeable market and business circumstances, but I repeatedly tell the great relevance of making annual budget.

A budget, what it should be?

1. A budget should be made in the all managers' consent with sufficient discussion.
2. To be agreed with certain action plan
 - a. Strategy.
 - b. Tactics.
3. Monthly bases P.D.C.A cycle and review in Pessimistic and Optimistic Perspective¹.

In the last column I already described the first and second issues. Now, I describe shortly about the third point.

In the last column I introduced next monthly chart named: **The Budget Implementation Sheet** or **Valued Action Plan Sheet**

I shall describe this form and use deeply in the column of **Management Review Meeting** using THREE (3) important meetings, but I explain now it briefly.

There are 4 items which are Annual Plan, Actual Plan, Outcome and Prospect in this Budget Implementation Sheet or Valued Action Plan Sheet.

¹ **Editor's Note about Pessimistic moreover Optimistic Perspective when evaluating an action plan and its budget using PDCA cycle:** A complementary vision from only Optimistic & Pessimistic vision would be other point of view that running very well when evaluating an idea in a meeting or approaching a budget. It may be the **Six Thinking Hats** technique of Edward de Bono moreover other one named **Disney method**: https://en.wikipedia.org/wiki/Six_Thinking_Hats https://en.wikipedia.org/wiki/Disney_method

Budget Implementation Sheet V 1.1													
Budget	2011	Month -1				Month 0 -Present Month-				Month +1			
Quarter	1..4	Annual	Actual			Annual	Actual			Annual	Actual		
Article	XXXXX	Plan	Plan	Outcome	Forecast	Plan	Plan	Outcome	Forecast	Plan	Plan	Outcome	Forecast
Sales &	KMH												
Production	Sum												
Total Cost													
Gross Profit	Sum												
	Gross Profit Rate												
Direct Cost	Workforce												
	Efficiency												
	Raw Material												
	Scrap												
	Scrap Rate												
	TOTAL												
Indirect cost	Depreciation												
	Workforce												
	Equipment Cost												
	Transport												
	Other expenses												
	TOTAL												
Sales Dirc.Cost	Workforce												
	Equipment Cost												
	Transport												
	Other expenses												
	TOTAL												
Indirect cost	Headquarter												
	Other expenses												
	TOTAL												
Profits Before Taxes													

• Present Month (12 months).

• (4) Prospect: The outlook or forecast of this month. To be reviewed in accuracy.

• (3) Outcome: The result of the last month to be compared with the actual plan.

• (2) Actual Plan: Planned at the 5th of the month before last month to be compared with the Annual Plan and analysed.

• (1) Annual Plan: Planned at the annual budget making.

· This table is the first sheet of material to be taken to the Management Committee meeting.

· The rest of the sheets that follow this first sheet are diagrams and graphs of each Activity and KPI.

This sheet is used in the monthly review of the budget implementation process and is reviewed in the Monthly Management Meeting at the first week of the month. Habitually, the 5th of each month.

1. Up to the day of 5th, the accounting section must confirm and provide the data for the reviewing meeting. For instance, on Month-2 (March the 5th) we have to review the results of the Month-1 (February), however the main theme of the meeting is:
 - a. The Prospect of March, for the next 25days, and design the countermeasures according to the annual plan;
 - b. The Prospect which was made at the February the 5th and it was revised and confirmed in the Monthly Production Meeting of Feb-25th ;
 - c. The Prospect of Month-3 (April) and countermeasures against the annual plan.
 - d. The cause investigation for the difference or gap of Actual plan, that is actually the Prospect for Month-1, made on February the 5th, against the Outcome, which is confirmed at Month-2 on March the 5th.
 - e. To level the capacity up from prospect
 - f. The review of February profit results and the review of the gap and causes.

As you aware, the **Budget Implementation Sheet** is used for revising the budget in the changeable market of circumstances situation and on its monthly bases. However, if there is not base of annual budget, there is not possible to reconstruct the monthly budget, because the construction of budget is so hard task and workload.

Again, in another words, 'monthly-budget' can be exist based on the 'annual budget'. So, 'Annual Budget' is useful and should be used, even though in changeable circumstances.

2) Reconstruction in Strategy.

There is the case of tremendous circumstances are changing. Yes, it is possible to happen.

For instance in September 2008, the Bankruptcy of Lemman Brothers was happened. Within that financial storm my previous company also got involved in this tremendous business drop, specifically in the middle of the financial term. Such case is not habitual, but is possible to occur.

And, of course, the annual budget cannot be used, because the presupposition had already collapsed. In such case it is required to construct the new budget plan in strategy. So, it is the field of strategy.

When looking at the world, there is the opinion of "Extrication² from Budget". And there are some alternatives such as BSC: Balance Score Card. However, I recommend to make budget in fare by mean of a consensus of managers for designing a corrective method.

I wrote that main task of managers is to make or participate to make up budget and the implementation or realization.

Therefore the budget is equal to the target, based on the condition of:

1. Fear and deep consideration and
2. Specify the action program.
3. Also monthly bases have to be reviewed and feedbacking in the monthly managerial meeting: Annual plan, Actual plan, Prospect of the next month and Countermeasures.

Then my answer was: *'Let's separate the market (sales) circumstances in case of violent changes (such as Lehman Bankruptcy in 2008) and normal situation based on minor or medium changes'*.

On what evaluation can we judge violent or minor change? It is a problem but in your common sense. And it is essential to review the plan in monthly PDCA cycle³.

² **Editor's Note:** 'Extrication' meaning in this case is written as a 'liberation'

³ **PDCA:** As Master Koichi Kimura teaches in previous lectures, PDCA is a test and error cycle used mainly in Gemba. When error, mistake or misadjustment occurs the 'Act' phase is such as 'Adjust' phase.

3) PDCA Deming Cycle

In the Factory Management-2 (Policy Control) I wrote about PDCA of Deming Cycle is not adequate for the action plan and the implementation. But I guess there might be deep-seated doubt to my argument. Therefore I would describe a little more.

I pointed out that the action plan items are no the wish list and the lack of planning process causes unnecessary additional investment and the bad achievement results.

Also the objects of "Check" are not the gathered statistical data to feed back for "Action", but the process and the completion.

Then, again I suggest to be freed from the spell of P.D.C.A cycle.

One of important factor for the success of a project is the action plan. And I described my case of consulting job and when I got the requirement I share 70% of my effort to make the action plan which identifies the policy, targets, action items, process & methods and evaluation methods.

Perhaps the root of the doubt is the accuracy of "process" to realize the action item. Yes, it is important to list up the necessary processes and the working items in the way that if there are the insufficiencies of process listing-up, it is not possible to achieve the target. Then the root of the doubt is the possibility of high accuracy process list-up.

Is it possible to make high accuracy "process" list-up? Yes, it is possible to list-up of necessary process which the level doesn't give the damage to the target achievement even though happened the small insufficient cases. Now I introduce my method which I use. The name is KJ Arrow Diagram.

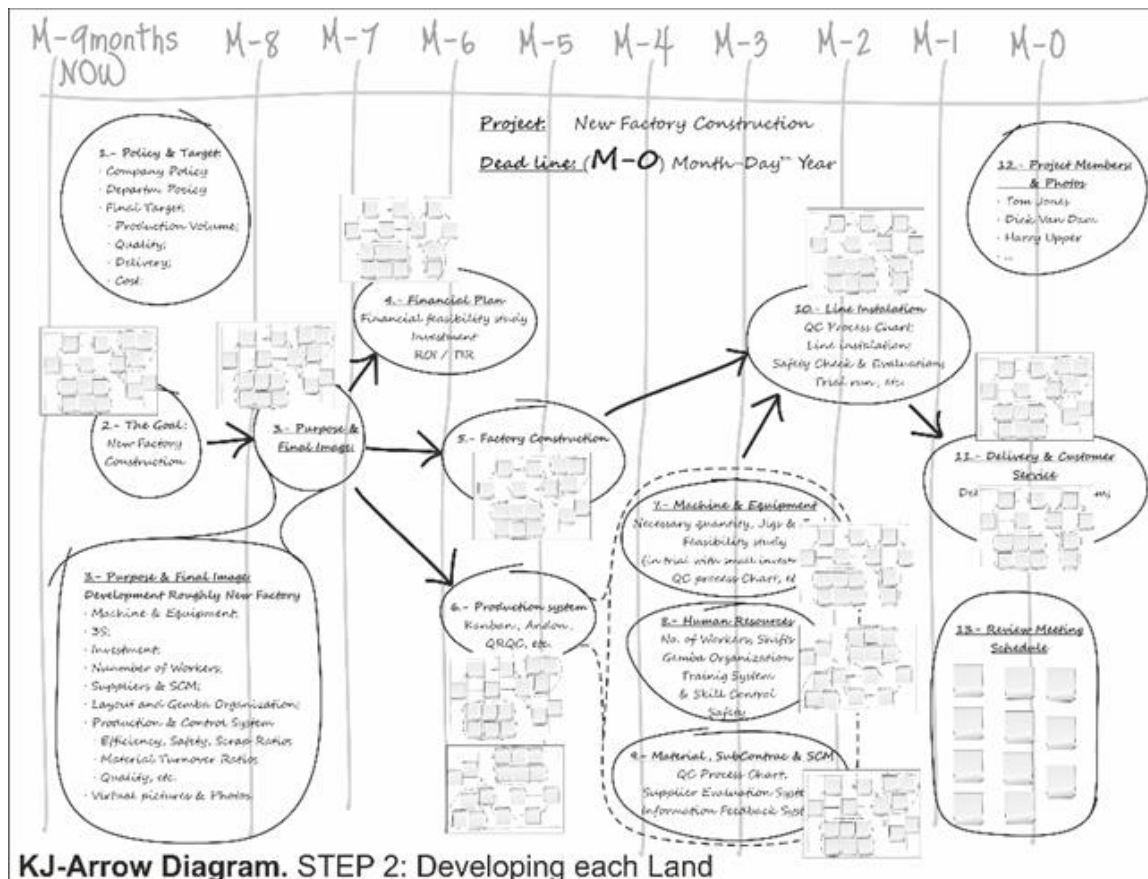
KJ Arrow Diagram.

This is the image of KJ Arrow Diagram.

This is the application of KJ method and arrow diagram such PART Chart.

KJ method⁴: One of idea creation method which is developed by Jirou Kawakita.

⁴ KJ Method is the Affinity-Diagram



For instance, the above picture:

Project: New Factory Construction and New production line.

Term: 10 months from the establishment of the project to delivery start. (N-0 ~ N-10)

The contents of this diagram: (Depend upon the project, it is different.)

1. Policy and Target: Policy statement and target of Production volume, Quality, Delivery, Cost.
2. The goal of New Factory Construction.
3. Purpose and Final Image (Grand vision of New Factory): Machine & Equipment, 3S, Investment, Number of workers and Gemba organization, Suppliers & Material SCM, Layout, Production & Control System and KPIs (Safety, Quality, Efficiency, Scrap ration, Material turnover ratio etc.) and virtual pictures & photos (as the image).
4. Financial Plan: Investment, Financial feasibility study etc.

5. Factory Construction: Space, Layout image, construction etc.
6. Production System: Kanban, Andon, QRQC etc.
7. Machine & Equipment preparation: Necessary quantity, Jigs & tools, Feasibility study (in trial with small investment), QC Process Chart etc.
8. Human Resources: Number of workers, Gemba organization, Training, Skill control, Safety etc.
9. Material, Subcontract & SCM (Supply Chain): QC Process Chart, Supplier Evaluation, Information feedback system etc.
10. Line Installation: QC Process Chart, Line installation, Safety check & evaluation, trial run etc.
11. Delivery & Customer service: Delivery control system, Visual board etc.
12. Project member and photos: Names of members with photos.
13. Review Meeting Schedule: Grand review by top, Departmental review, Project meeting and with record.

Lands

This diagram which is the master diagram, and has 13 lands from Policy and Target to Review Meeting schedule.

For instance: Purpose & Final Image Land.

In the land there are many cards. These are the ideas of necessary activity which are created in the discussion in KJ method and these cards created ideas are described in "Purpose & Final Image Description" as the Grand Vision of the New Factory.

Other lands also have cards created in KJ method. Ideas of necessary activity (process) in the diagram. Policy & Target with policy statement is easy to write down. This is the flag or banner of the project.



Purpose & Final Image: In front of the (for instance) prototype, drawing, photos of machines, KPIs of current production lines, customer information, suppliers, financial reports and the policy statement & target, the discussion in KJ is made. This process is important to identify the goal and to share the image of final goal.

The left is the image of KJ discussion.

No criticize, No neglect of cards;



Creating ideas from words of other persons.

Writing short & concise sentence and, One idea in one card.

Example of Potential Defect Analysis in KJ.

Layout the lands in the diagram.

Naming of lands. Arrow of relation and order.

... I omit the detailed explanation of KJ.

And when making the action plan of above New Factory Construction, the steps are.

1. Making grand discussion in KJ and confirming the Grand Vision of New Factory.
2. Based on this grand image, discussion of necessary discussion items (title or name of each lands: Financial plan, Production system, etc.)
3. Discussing detail processes of each lands (with involving relevant sections).
4. Individual lands are required to make process diagram. And the form is same to the grand diagram.
5. Process time: Each lands is required to estimate the process time.
6. Layout the lands in considering the relation and the time in the Grand Diagram.

Therefore a Grand Diagram is huge and is highlighted in the gemba as master plan.

Now the important points.

1. Clear purpose and the goal.
2. Sharing the purpose & goal and final image.
3. Writing down the process & order in the cards which are collected as much as possible. Also writing down the necessary things (necessary condition for the goal) in KJ.
4. Deciding the judgement criteria to be allowed to move to next in each process. "Check the process implemented as planned" in each criteria.
5. Feed backing ideas, lack of process or necessary activities in masterplan and individuals. (If the lack or additional ides are found.)
6. Standardize the process of thinking for future.

This is my method to create the high quality action plan.

Again one of essential factor for the success of a project is how to make the high quality action plan and the objectives of "Check" is not the collecting statistical data, but the process and the judgement of to be possible to move to next.

If the project requires an expensive investment (such new factory construction and new expensive machine introduction), the feasibility study must be made in not only the fiscal possibility, but also the cost to effect.

In the feasibility study, the PDCA cycle is made.

Then in the big project which is not allowed the style of trial-and-error, the Deming cycle is never adequate.

4) Ji-Koutei-Kanketsu (JKK: Self-Completion Process).

I was surprised by the question of my friend. He asked me what is JKK?

Ji-Koutei: Self-Process. **Kanketsu:** Completion.

There are 2 intentions in JKK.

1. One is "Built-in the quality in a process": In Self inspection, Poka-Yoke device, Activity of "Eradication of Muri or Difficult work".
2. Another is the thought stemming from the book written by Sinnichi Sasaki (Former vice president of TMC). In fact the total Japanese productivity is very low. When seeing the total productivity of manufacturing industries is good as represented by TPS. However when seeing total industry including office worker to be called as white colour, it is very low. Obviously the productivity of woman in office is quite low.

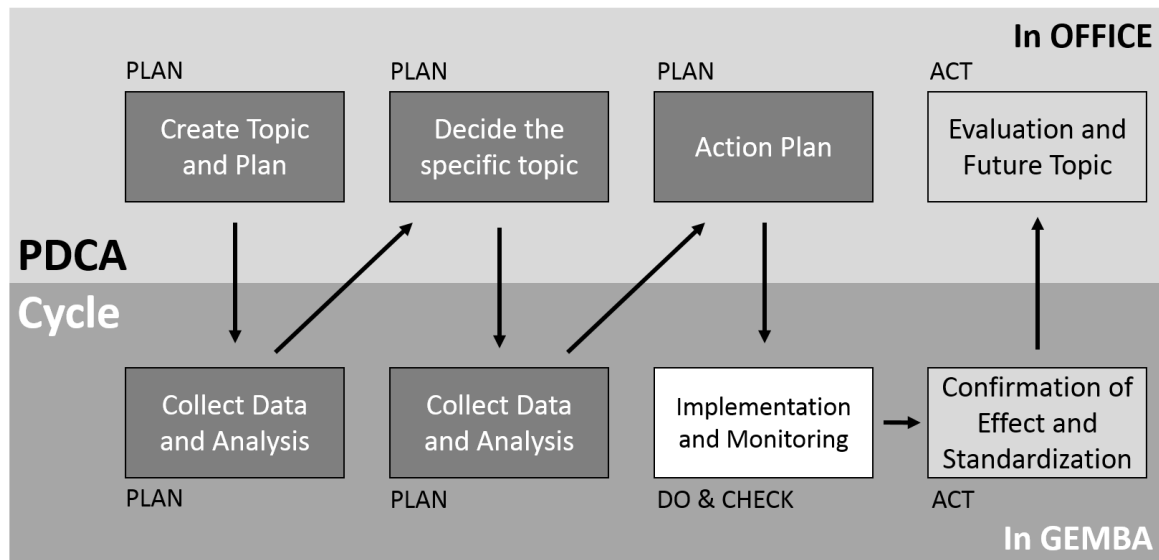
Then Toyota decided to make an activity to improve the efficiency of indirect (office work). (I believe this activity has been doing since 2007.)

The essence of this activity is

1. Making clear the purpose and the goal.
2. Making Clear & Sharing the final out-put image.
3. Writing down the process & order.
4. Deciding the judgement criteria to be allowed to move to next in each process.

5. Writing down the necessary things (necessary condition for the goal).
6. Reviewing the JKK approach and passing down the process of thinking for future.

JKK is a scientific approach to seek the measure for better work in looking total processes. You may understand that this JKK approach is same to my kaizen process below.



So-and-so. The 6 essences of JKK and my KJ Arrow Diagram are same, aren't they?

I wrote the process of project case above. Generally a project case has no existed process. Then it is required to imagine. But a current job has the process and both of them in essentials are same.

III. Policy Statement

Now, let's go back to the main theme, continuing with Policy Control explanation. I wrote the example of policy statement in the Annual policy announcement using the example of the policy 2010 statement of Sumitomo. However, why a policy statement is so important?

That is because it is necessary to gain the condition of "All people's participation" and also it has to be penetrated the corporate thought.

One of important factor for the success of budget, action plan implementation or even, any reform in policy control and any kaizen methodology requires the condition of 'All people's participation, including gemba workers' and to get efforts focused on a unite vector for every worker of the company.

Probably I could gain your understanding of this point. But how can we make the condition of "All people's participation"? So, it is easy to say. But in fact it is difficult and some companies have hardships.

I shall describe the method to gain the condition of "All people's participation" in the column of Human resources development & Motivation, and in here I describe just regarding policy statement.

To gain the "All people's participation", it is essential to share the Sense of Values in common with all. I believe it is no doubt in this point. Even, I have said that the president or the director speaks the annual policy statement in all area including the "foreign factories" in the Factory Management, Volume 1.

I have had a doubt about the effect of the speech to not only in Japan, but also in the foreign factories. These ones have different culture, history and sense of values. It is unbelievable to be possible to gain the shared Sense of Values with all.

Moreover there are various people who have different Sense of Values in one factory. Then, how can we let all people's satisfy (or consent) with the announcement, when we understand the difficulties encounters against different value senses?

Moreover, there are employees who cannot understand the meaning of the policy statement itself. For instance:

—What is the Vision 12? Or — what is the meaning of world economic situation?

—What does the path of recovery of profits? Or — what is the relation to us, the employees?

When I was in Mexico, I have made the question to a Mexican employee who was uncertain whether graduated a junior high school.

—Did you understand what the president of Mexican branch said? —I ask him.

—Sure, I could understand his Spanish which were easy words.—he said.

—Are you sure what is the Vision12?

—No, Kimura-san. I don't understand neither Vision12, nor the world economic situation and the relationship to our job.

Indeed, most of the line workers in foreign factories cannot understand the policy statement even though may be only easy words was used in their native language.

However they said in one voice:

—I don't understand what Vision12 is. —and continues— So, I understand that He (CEO or Chairman of this company) recognizes us as comrades, and we can imagine that his saying is important for our company and relates to our job. His policy doesn't cause any bad influence to us.

Moreover, I have made same interesting questions in the factories of India, and Vietnam with the result of most of them mentioned me same meanings. But, surprisingly, some of Indian workers told me different opinion as next.

—Almost I understood what the goal of this company is.— he realize— But I don't care about the situation of this company and the surround circumstances. Because, our interesting points are quality of lunch, welfare and wages.

Indeed, it is a fact that Indian workers are very frank and bitter. On the other hand Mexican workers are cheerful and aren't bitter. However I think the base situation is same and Mexican workers also have same point of view. Because when looking the worker's turnover ratio both of them were bad and 15~ 20% per month. However, there is better situation than in China which is 35%. As I said, it is better and however badly.

Incidentally, the workers of Vietnam and Malaysia were very low turnover. Their indicator is less than 2% per month. And they listen the speech of Annual Policy Announcement (Policy Statement) with ardour.

Now again, our employees have different sense of value and characteristics in the cultures. And it must be recognized.

Actually, Policy Statement is still effective? Or in other words, is still the Policy Statement actually important and effective? Yes, it is important for establishing the mind of "All people's participation".

Moreover, there are different sense of value, culture and circumstances of working condition. Therefore annual policy statement by the president is important.

I need to tell about the following 2 issues. First is The Story and Speech (Words) and second is The Step of penetration for the effectiveness of the policy statement.

1) The Story and The Speech (Words).

When making a Policy Statement, it is required the deep consideration for gaining the all people's satisfaction (consent).

Therefore, it is necessary to use the words which are easy to understand and concise. But it is not sufficient the consideration of just easy and concise words. It is necessary to consider the story characteristics and the words which can draw the people.

Then a Policy Statement needs to have both of story characteristic which is supported with the corporate mission statement (corporate philosophy) & Vision.

Idle Talk – The Attractive Speech.

Recently I could gain the opportunity to compare two very different kinds of speeches in USA. In that a country there was the presidential election. And as the result, unexpected person won the election.

One of the relevant things I think to myself is the very different ways of speaking of former and new president. The former president paid attention to choose the words and speak easily. On the other hand, the way of new president is rough, aggressive and sometimes vicious.

Another one of good speech I have been attracted. This is the speech of Mr. Steve Jobs in the graduation ceremony in Stanford University⁵.

⁵ Steve Jobs' 2005 Stanford Commencement Address (with intro by President John Hennessy):
https://www.youtube.com/watch?v=Hd_ptbiPoXM

Firstly I felt a little strange, because it was not his normal style which he made in the presentation of new products. It wasn't good speech style, however it was impressed. I omit the explanation of the contents of his speech. If you have your interesting I recommend seeing and listening the Video

For the success of annual target, it is important to gain the mind of "All people's participation". And for the unification of the mind, the annual policy announcement is a very relevant ceremony.

Flying notes from Kimura-san

KOTODAMA: The Spirit living into the Speech

In Japan, there is an ancient tradition which “a soul inhabits in the speech (word)”. And it is called **Kotodama**.

Koto: Kotoba: Speech (Word).

Dama (or Tama): Tamashii: Soul/Spirit.

It is believed that a Speech (the words and tone used) itself can give the effective influence to other peoples. Whether it is good or bad. And it has a spell and works magic on a person with through his brain and sometimes can change the life of a person.

I believe that word has a spiritual power and we need to understand that it gives big influence to the emotion and situation of a person.

On that way speech gives the influence to not only someone to talk to, but also to the person himself.

Namely, if the person talks a bad word, for instance ‘You fool!’ he hurts and makes himself to be poor with it, because he himself also listen it.

Anyway I ask you to give the importance to the words.

Koichi Kimura

Something more information about Kotodama: <https://en.wikipedia.org/wiki/Kotodama>

For the success of annual target, it is important to gain the mind of "All people's participation". And for the unification of the mind the annual policy announcement is important ceremony.



Picture on the right it can see new employees listen to a speech during the welcome ceremony for new employees of Toyota Motor Co on April 1, 2015 in Toyota, Aichi, Japan. Annual policy announcement.

Story characteristics.

Now let's think how can we gain the all people's satisfaction (consent) of the company's target? It is necessary to do many things. And one of important ceremony is the speech of annual policy statement by the president. He needs to talk his **target** and **vision**.

And when making his talk, one of important factor is the **story characteristic** in his talk.

By the way, in what a person feels his satisfaction (consent)? Or, how can we make a deep impression on the audience?

Perhaps the answer is the contents of explanation? Yes it is true and necessary but there are the case of Mexican workers and Indian workers which I described above. In these cases they cannot understand the contents so well.

Then, is the process of penetration? Yes it is also true and absolutely necessary but still it is not sufficient to gain the 'all people's satisfaction' (consent).

May be direct speech or conversation with through the ceremony? Yes, indeed it is relevant.

With through the speech of policy statement, the president needs to speak his vision and annual target with his words. And with through the direct conversation, it is to expect all people to feel the humanity in this company. And it is to expect the relation of person to person.

It is quite true that all people cannot always understand his telling. A president or top management requires telling the 'dream and targets' of the company. And one of the more significant points when listening the speech is to establish the relation of mind 'from person to person'. However please, not confuse with the relationship 'from company to person' which is sometimes not humanely-oriented.

In what persons feel their satisfaction (consent)?

The contents... Yes, but the relationship 'from person to person'. There are some cases, which are:

—I agree with his opinion, but I hate him. Therefore I don't cooperate.

—I don't understand his saying, but I like and trust him. Therefore I cooperate on him.

—His speech is very beautiful, but I cannot trust him. Therefore I don't want cooperate on him.

—What a poor speech he does! But I can feel his passion and also I trust his personality. Therefore I will help him.

Now as you aware, a person feels the satisfaction (consent) in the relation from person to person (P2P).

Let's consider the story characteristic from other point of view in the speech of Steve Jobs. In his speech he spoke about his life story. He intended to sincere advice to the young persons and he used his life history which anybody can replace in their case. This point of view is effective to attract people. However, it is difficult to use for a policy statement in a company.

Story structure is essential in the speech. And the speech should be nicely varied in Opening, Body and Closing. Moreover, the **speech** should be made with **Logic**, **Passion** and **Trust**. Truly these are not my words but the author is Aristotle⁶ who is the philosopher of ancient Greece.

He pointed out 3 elements which are Logic, Passion and Trust to gain the satisfaction of audience.

⁶ Aristotle: <https://en.wikipedia.org/wiki/Aristotle> (Aristoteles)

Editors' Note: There are an interesting and complementary lecture about this issue into a description of an new technology APP made for smart devices: <https://www.showell.com/the-perfect-sales-pitch-from-aristotle/> **Logic:** (Greek: Logos) Logical content, reasoning and arguments. **Passion:** (Greek: Pathos) Emotion and mental state. **Trust:** (Greek: Ethos) Virtuous character and credibility.

The logic

The Steve Jobs' speech was composed in logical which are in the clear message, structure and rational argument.

The Passion

As I wrote above his speech (in Stanford University) was not his normal style which we saw his presentation of new products. And it was inconspicuous, no performance, no overhead projection and just to read the paper on the speech table. However, his speech attracted many people. The main reason was his passion. He wanted to suggest to the young people. And the people could feel his passion in his words.

A management needs to speak his vision, goal. He needs to speak the future of the company. It is no necessary to use flowery words, but is necessary transmit his passion.

The trust

Steve Jobs might consider the theme in his sufficient knowledge and experience, his confidence and belief of the contents and consideration for the people.

One of key factor in good speech is the trust. Therefore a management and the speech are required to gain the trust from people. For getting trust from the people, it is necessary to spread his faithfulness which the vision and goal are not for just his or the company's profit, but for all people.

And the story is needed to be backed by the corporate philosophy. If there is no certain corporate philosophy, the policy statement is not possible to gain the trust from the people. A policy statement needs to speak the vision and goal and shouldn't be the state of temporariness. And the vision also must be backed by the corporate philosophy. If not, it is impossible to gain the trust of the people.

As I wrote in an annual policy there are 2 factors in the last column. One is the part of common development theme such as quality improvement, safety improvement, cost performance improvement, sales expansion. And another one is the realization of Vision.

The annual speech of policy statement is one of relevant opportunity to express the corporate vision. Direct talking by management is important, however, in some cases it becomes in business-like or serious.

I know that a speech in conference and an annual policy speech are different. For instance an annual policy speech becomes business-like which is just transfer the things and pedestrian. However, I ask you to provide good and to be remained in all peoples' hearts.

Recently there is the trend of making company song and all employees singing the song at the beginning of the work in Japan. Many companies ask to the song & writing to popular songwriter. This is the indication of the corporate wish of the all people's participation and unification of mind.

I think that a management should devise to talk his policy statement and vision more in an ardent manner.

2) Steps of Penetration

The penetration of corporate philosophy, vision and policy is directly linked to the corporate profit. So, the penetration requires the continuation.

However, is it possible to penetrate the policy statement in all employees in just Annual Policy Statement ceremony? Of course the answer is 'No' and it is not sufficient to orient the working direction in all employees, much more in foreign factories.

And it is necessary to have certain steps, which are.

1. Policy statement
2. Publication (employee magazine, logos, posters & banners)
3. Departmental policy & speech by managers
4. Morning meeting & speech by leaders
5. Graphs & charts with targets in visual board.

Morning meeting & speech by leaders.

This is one of the roles of the gemba superior⁷.

One of important factor to gain the mind of 'All people's Participation kind of the realization of the corporative policy' is one of essential role of leader, supervisor such gemba supervisors.

⁷ Gemba supervisor may be Supervisor, Team Leader, Area Manager or whatever other named who first line worker reports.

Digressing from the main theme, two issues. First one is: What is the one's own decision? And second is: The qualities of gemba leaders, supervisors.

What is the one's own decision?

Anybody needs to decide somethings daily bases by one's own. For instance:

—This problem is so difficult for me, then I ask other person's opinion.—this case also he made his decision to make question to other person.

And...

It is quite natural that most of part of 'making decision by a person' is influenced by the circumference such as family, neighbourhood, locality, society, relatives, etc.

According to an Associate professor of Pennsylvania University and columnist of Harvard Business Review, Mr. Jonah Berger, *'We all receive the influences from other person and circumference before we are aware of it'*. So, even though we all say that it is 'my decision', actually, almost 99.9% of them are caused by the social influence.

Generally an employee needs to be in the gemba 8 hours in a day, 6 days in a week (the case of Indian factory). And, even Indian workers, must have the influence of the gemba to their act. Therefore such publication and visibility (in visual control) are important.

I have said that the visibility (in visual control) is important, because it is like 'Air'⁸. Even though a line worker cannot understand the meaning of graphs & charts with targets, the visibility in notice board is important, because these are like 'Air of the gemba'.

The qualities of gemba leaders, supervisors.

The key for "All people's participation (to the realization of policy) is the qualities of the gemba supervisors such group leaders and supervisors.

Recently The Gallop Organization⁹ published an interesting information regarding the 'Employee's engagement (motivation)'. So, according to the investigation of Gallup Poll, to form the 'Employees engagement' **the role and quality of gemba supervisors** are essential factors.

⁸ **Shared sense of Values, Air and Time:** Three basic factors linked by Quality Control Circles for **Kaizen** development explained by Kimura-san, already in 2011.

This point of view is quite natural and is hardly necessary to say, although I was surprised by the figure. Again, according to the Gallup Poll, more than 70% of 'Employee's engagement' depends on their superior and **more than 70% of superior hasn't the necessary aptitude.**

I knew these things; however this figure of 70% is my surprise.

Again I have to figure the role of gemba supervisor: It is essential to form the mind of 'All people's participation', Kaizen mind or whatever. Moreover, one of managerial important role is to orient the total capacity to realize the policy in to penetrate the Policy Statement or managerial direction. In this way, the first step is the penetration of the Annual Policy with the Statement. In order to get it, it is necessary to make the Air or the atmosphere in Gemba with through the above steps.

5 STEPS IN POLICY PENETRATION:

1. Policy statement
2. Publication: employee magazine, logos, posters & banners.
3. Departmental policy & speech by managers
4. Morning meeting & speech by leaders
5. Graphs & charts with targets in visual board.

⁹ The Gallop Organization: <http://www.gallup.com/home.aspx>
[https://en.wikipedia.org/wiki/Gallup_\(company\)](https://en.wikipedia.org/wiki/Gallup_(company))

IV. Vision (I)

A top manager should speak his Policy Statement and, as I wrote above, the Policy Statement should have the story characteristics for getting the sense of unity of all employees by means a Vision, which composes the Story. So, the Story is essential for Policy Statement.

So, according to that, what is vision? This is the goal and the dream, which are based on the managerial operating style and the importance of existence on the management philosophy, at a certain point of time.

Using another words. It is mentioned the middle term corporate image of the company to aim to employees, shareholders and society.

Vision is one of mile-stone and needs to have concrete pictures which are the purpose and goal also needs to be supported by the strategy. If there is no strategy in the vision, it is mere "Pie in the sky". So, a vision should be supported by the strategy which has the purpose, goal with timing and some level of methodologies.

Now again, what is Vision? There are some different and complementary points of view.

I prefer use next definition: 'It is the future appearance which the entire organization desires to aim, moreover it is the common object of the organization and the message which encourages the people'.

Although I present another point of view for your reference from a person whose name is Burt Nanus¹⁰ and he is Professor of South California University & Professional of leadership. He introduced very good words about Vision.

1. Vision attracts and gives the force.
2. Vision brings the meaning of work in workers.
3. Vision creates and makes the excellent norm.
4. Vision can be the bridge between present and future.

Therefore, it is possible to say that a company who has no certain vision, cannot survive. And a vision is so much important for the corporate management.

VISION is the common goal and dream at present, supported by the strategy, that encourage employees

¹⁰ Burt Nanus : https://en.wikipedia.org/wiki/Burton_Nanus

V. Technological trend

Now I would talk the current technological trend a little. But, why? Why do I need to tell this story?

Because when making or reviewing a corporate vision it is required to understand and know the external circumstances such market, politics etc. particularly the technological trend is essential factor.

A vision should have the strategy. Another word, vision and strategy are the both side of one coin. For making or reviewing strategy, it is essential to understand the internal and external circumstances.

1) The 4th Industrial Revolution

When I made the factory management lecture for a company in a TV conference, I got one question.

The question.

— Sensei, what is your vision for 10 years future? —Yes, this student questioned me my vision of business.

Normally I review it at New Year's holiday with drinking Sake. But this year (last year January 2016.) I became more serious and couldn't enjoy Sake, because I had been thinking my weak points which are necessary for my future business.

I believe that the circumstances of any gemba (working field) are changing very rapidly and dramatically, because of the ability of IoT, AI & Robot and the trend of 'Industry 4.0 (In USA; Industrial Internet)' which is so called the 4th Industrial Revolution in Japan.

This 4th Industrial Revolution affects to any working fields: Agriculture, Accounting, Financing, Medical, Education, Law, Personal affairs, Security & Crime prevention, Logistics and Production.

A little let's look at the trends in following photos where you can aware IoT & AI & Robot has been penetrating in our daily life very rapidly.

The popularization of smart phone is to open my eyes in wonder. For instance, this February, 2017 our Chilean daughter visited us for the first time in a while. On one occasion she accessed her bank in Chile in her smartphone to settle a problem from her room when he was already in Japan. Also she showed me her room of the apartment real-time in the internet. On another

occasion and when she travelled to Kanazawa¹¹, for reaching to the appointed place she used her smartphone. And, she just input the appointment place and the smartphone tells the convenient and shortest route and the time required.

It is not a unique news that AI defeated human champion of Go¹² and Shogi¹³. Such technology can't be no useful to industries and gemba and I believe that many companies have already begun to use such technology, moreover this penetration is spreading in industries very rapidly.

Next are some examples.

As a matter of fact, 2 robots welcome guests at the reception of a hotel, the robots make a conversation with and receive the customer at the check-in.

¹¹ **Kanazawa:** Is the capital city of the prefecture of Ishikawa: <https://en.wikipedia.org/wiki/Kanazawa>

¹² **Go:** It is an abstract strategy board game for two players, in which the aim is to surround more territory than the opponent. [https://en.wikipedia.org/wiki/Go_\(game\)](https://en.wikipedia.org/wiki/Go_(game))

¹³ **Shogi:** It is also known as Japanese chess or the Generals' Game. <https://en.wikipedia.org/wiki/Shogi>



These 2 dinosaurs' receptionists welcome the guests in a hotel reception.



In an aquarium on the Lefts, robot fishes are swimming. On the Right Image, Robot trash boxes moving around. Moreover in the hotel room, speech recognition robot services the open & close curtains, switch On & Off of TV and/or air-conditioner.

And if the guests wish chats, the robot can be the companion. In this medium scale hotel, now 140 robots work. Normally hotel business requires many staves. But this hotel has only 2~3 staves usually. Then it is realized to reduce cost by robots use.

Agriculture also is one field of industrialization like as factory.



Factory type agriculture which is managed and controlled with IoT and sensor is gradually increasing.

So, the factory production gemba also is changing amazingly.

It has begun to produce and manage & control with IoT x AI x Robot. And the field of Problem solving, Optimization and Creation of value have begun to change. For example. Production control, Demand forecast, Delivery control, Machine control and also Machine condition check & alarm, Inventory control can be made by IoT x AI and sensor. Problem analysis and collection of data can be made by IoT x AI and sensor.

2) Digital and Real-time

The key words are "Digital and Real-time".

The big change in the data flows beyond the framework of from manufacturing, logistics to retailing by IoT, each business that has been separated in the distance has become connected will come. And as the result, the relation of these production gemba, logistics and retailing is as if they were controlled by electric Kanban in near future.

The production itself also is changing. Now it is popular the combination of Robot and Human in production gemba. So, the field of robot is (and was) repetitious work which is programed previously. However now the self-thinking type of robot (smart robot) is in the limelight.



For instance above photo. This is the scene of confirming the movement of the automatic picking line in Yokohama Delivery Centre.

The objectives are 1,000 kinds which the kinds of products, size and the form are various. And also the condition of picking is different in each occasion. And in such condition, this robot can sort and package in the speed of 500pieces/hour.

This picking robot can pick up and carry these objects which have various size and types and in various situation efficiently. This smart robot is really amazing.

This robot has brain (AI) and can think the circumstances real-time by himself and can pick up the objects. Then it is no necessary to make the programing.

As you know many industrial robots work in production gemba. And these robots overwhelm human beings in the repeated work in the speed and the accuracy. However these robots require the programing.

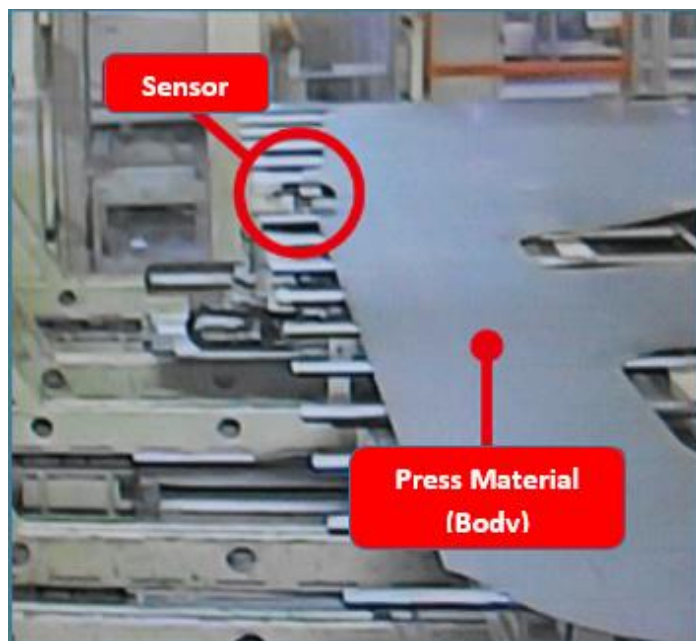
For instance the work of picking up one screw from a box in which there are hundreds screws.

If human being, even a child can do its work easily. But for a robot it is difficult because the condition of screws are infinite variety in terms of tangled, variety of direction, etc. And for sorting and picking one screw, it is necessary to make program in infinite variety of movement patterns. I don't say it is impossible, but is required tremendous hours and months of work and programming. Above smart robot uses a magic which is programing real-time and at the occasion each time.

The advent of this type robot can be no necessity of Robot & Human combination and enable uninhabited production line in future.

One of strong point of this company who developed this smart robot and system is that the system is available to install in any other existing industrial robots which are required currently to make the programing.

Therefore any factory can adopt this company's self-thinking system in his industrial robots. And this company begun to deliver this system to Nissan, Honda, Canon, Komatsu and others manufacturing companies. But, how about the movement of Toyota?



Toyota also is considering and accelerating to use the combination of robot and AI.

Toyota's press process of body parts, regarding to avoid the defect of broken:

- 1.- Gathering data with sensors and AI (deep learning).
- 2.- Analysis by AI.

Usually the analysis and visual inspection are made by skilled operator in very long hours.

Toyota is trying to realize the innovation of IoT x Robot x AI in next 4 steps.

- 1st step:** Automatic detailed data gathering in each process.
- 2nd step:** Real time data gathering.
- 3rd step:** Data Look-ahead for the sign of machine trouble.
- 4th step:** In using AI and gathered big data, improve quality dramatically.

By the way, I believe you have heard the word of 'Industrie 4.0¹⁴' which is the national project of Germany. And the aim is to realize the "Smart Factory which is called **Thinking Factory**" in other words with using the technologies of IoT, AI and Robot.

Yesterday I saw a topics in a TV program which introduced the new style of children education, in this case, mathematics subject.



Above is an example of customized education in AI-Sensei. In this way, education field also trends from total to customized education.

Each student has the tablet terminal. Yes, in fact the teaching is made by the tablet terminal. And the aim of this style is customized education which is possible to teach based on individual student's level. The tablet terminal is so called **AI-Sensei**.

¹⁴ **Industrie 4.0, Manufacturing for the future PDF Document:**

<http://www.gtai.de/GTAI/Content/EN/Invest/SharedDocs/Downloads/GTAI/Brochures/Industries/industrie4.0-smart-manufacturing-for-the-future-en.pdf>



The above picture is the conversation type robot which has the function of not only the conversation, but also checking health, taking photo and sending the photos to their mother's smart phone via internet. Now such educational robot has begun to sale in ordinary.

Yes, my concern areas are the field of IT and AI, Meanwhile within 10 years the circumstances of Gemba will change very dramatically. And If I couldn't have or learn the knowledge of these field, I will not be able to continue my consultancy job.

3) The Concultancy Job in the IT & AI era 'vs' Vision

Let's think a little about the consultancy job. So, what is a consultancy job role?

Consultancy Job is roughly:

1. Diagnose;
2. Suggestion;
3. Action plan;
4. Teaching and Guiding.

I think the job of suggestion and recommending suitable action plan and necessary techniques in diagnose and teaching and guiding can be replaced by AI-Sensei very near future.

At least it is required to use AI for diagnose like as medical gemba and also is required to include IoT, AI and Smart-Robot in suggestion. And I believe all of consultant, in my field could lose the job, if we would not develop ourselves. In such sense of crisis and changing circumstances, I needed to make my future vision.

Then I decided following Vision.

1. Logo of my mission statements:
CONTRIBUTE TO WORLD FACTORIES WITH BEST FACTORY MANAGEMENT SYSTEM.
...As you understand a mission statement is changeless.
2. Action guideline:
DEVOTE MYSELF TO BASES AND CHALLENGE TO INNOVATION.
...Also it is changeless.
3. 10 years Vision (Decided at 2016):
HARMONIZE FACTORY-MANAGEMENT WITH INNOVATION IN INDUSTRY 4.0.
...Omit the detail and concrete items and macro timing.
4. Strategy:
...Later I explain.

Again I would tell you that production gemba will change very dramatically within these next 10 years, because of the combination use of IoT (Internet of Things) and AI (Artificial Intelligence) and Robot (Thinking Robot).

Therefore, AI can learn and memorize all of the conditions of producing good or bad quality. Moreover, AI will be able to analyse the situation in changing condition and orders the best production condition in digital and real time.

On the other hand, the gathering necessary information of the condition is the role of IoT with very cheap devices or sensors.

AI will be able to analyse the situation in changing condition and orders the best production condition in digital and real time.

Currently the ratio of direct labour cost is 15% to 20%, of course depending upon the business, it is different. Consequently, this ratio will be down more and more. It is the meaning of that people will disappear from a gemba, but not be perfectly ZERO people.












4) TPM

Recently I'm asked to write TPM quite often. Therefore, I will change the schedule of my description and describe TPM as **Total Preventive Maintenance**.

I don't describe Total Productive Maintenance, because it overlaps with Factory Management in many area. In the frame of Factory Management, there is TPM. But this TPM is not the 'Productive', but **Total 'Preventive' Maintenance**. TPM also needs to be changed with IoT and AI.

The base of TPM is:

1. Regular inspection & maintenance;
2. Regular Self Check in the Checklist;
3. Standardize the "regular" timing and the maintenance methods.

Supply Index Label						
	Supply Cycle		Oil type		Ammount	
Label	Label		Cycle Label		Limit	
					Limits	
		Place: <i>Supply mouth</i>		Oil Type		
Colour		Daily		Type label		
		Weekly		Operational Fluid		
		Monthly		Maquinery		
		Biannual		Axis		
		Anual				

For instance Feeding Oil (or lubricants). The points to be marked with colour in the machine. The timing and kinds of oil to be standardized and identified.

Again the base of Total Preventive Maintenance is regular inspection and maintenance. And the "regular timing" is decided with the instruction manual and in the experience. This basic thought will be changed at the period of IoT & AI.

For instance, suppose you bought a machine-tool and this machine-tool should have the function of the voice announcement. When it is necessary to lubricate, the voice announcement informs the point and the kind of oil. This machine-tool equips the sensors in necessary points which the machine-tool maker investigated.

The machine-tool has other functions such as Identifying and informing the timing of changing tools, the condition of chips in the machine, inspection & alarm and other troubles before machine down.

TPM will change to **TSM (Total Smart Maintenance)**.

Actually such machine-tool has been begun to sale. And this machine-tool's additional function is automatic collection of data. So, this data is gathered by the machine-tool maker in the internet link automatically. Therefore, AI in the machine-tool maker can learn.

Again. The machine-tool was sold to a company, So this machine-tool has sensors and AI and AI gathers data:

1. This data is used in the company.
2. And, in parallel, this data is transferred to the machine-tool maker automatically. Therefore, this data can be used for the machine R&D and better service to the customers.
3. And, this data is used for AI keeping on deepening learning.

To use the IoT and AI, on of essential infrastructure is cloud & cutting-edge computing system.

And now a little more about AI and IoT...

VI. Which will professional field be replaced in the age of AI + IoT?

As you know my professional fields are TPM, Kaizen, Factory Management, TPS and TQM.

1) TPM

I have described above. And it will survive and continue to be used. Of course the contents will change. However this will be important factor in future factory as a Smart-factory, so the transition of maintenance work is always changing and from Corrective Maintenance (Broken and Repair) to Preventive Maintenance. And, from Total Preventive (or Productive) Maintenance to Total "Predictive" Maintenance.

Total Corrective Maintenance →
→ Total Preventive/Productive Maintenance →
→ Total Predictive Maintenance →
→ Total Smart Maintenance (TSM)

2) Kaizen

Of course, it is essential even in smart factory which cannot be ZERO person relation.

3) Factory management

The factory Management is essential even in a a smart factory.

I introduced the frame of Factory Management in Factory Management-1 and and the frame is constituted by TWO parts which are Rightware and Leftware.

The area of Rightware will no change, However, the problem is the field of Leftware and its Techniques. For instance TOC, MRP, ERP etc. will be deleted in the evolution of IoT & AI. Anyway I will be required to review the items of Leftware in a very near future.

4) TPS

TPS as **Total Productive System** is a theory and the unique point of this theory is to have the tools to make it possible. Therefore TPS will continue. However the tools will be changed or another words will be continued to develop.

For instance, Kanban System which is one of essential tool for realizing JIT.

In the first place, Kanban system is changing. When I worked with Toyota, Kanban was a paper cards. After, it was changed to magnetic tape, and later it changes to an electric Kanban.

One of weak point of Kanban system is that it is necessary to have stock even minimized, because of the existence of Lead Time (LT).

When looking the 10 years in future, a gasoline vehicle which is composed of more than 30,000 parts is changed to EV (Electric Vehicle) and/or FCV (Fuel Cell Vehicle) which is composed of 3,000~10,000 parts, depending upon the accounting method. This meaning is to reduce the LT dramatically.

By the way, I have seen a publicity in TV in which a housewife opens the refrigerator, takes a drink bottle out, which she always and constantly use. When she takes this, the purchase order is made automatically by an internet connection. In fact the refrigerator, which has such function, just has begun to sale.

Now the trend of factory control is moving from Central Control to Independent-Dispersion Control with the use of IoT.

It is the meaning of disappearing the kanban system itself even though remaining a little part.

But TPS will continued, because it is developing and reforming continuously and I will be continuing teaching this theory and classic tools, also, which combined with new technologies.

5) Six Sigma

Six Sigma is not a theory, but a system. Actually, it is a Project Management System and I think the most important part of this system will become unnecessary and be replaced by AI.

As you know the process of Six-Sigma is DMAIC and DFSS. The processes of D: Define, M: Measure and A: Analyse. All of them will have the influence of IoT and AI.

As you know the structure of this system is: Champion, Black Belt decide and focus the theme. Training and education of Black, Green and Yellow Belt. Usually works in Six-Sigma¹⁵ is based on project activity. And the most important part is to decide and focus the THEME. Near future, the work of deciding and focusing theme were replaced and/or helped by AI, include the use of cloud.

The part of education & training is also helped by AI, and no certification of Six Sigma were required, but a Project Management System skills and knowledge.

By the way, talking about the base thought of Industry 4.0, I have read an interesting book written by Yasuji Kawauchi published at 2004 who is a specialist of sewing industry. In his book he proposed the trend of "customization of production". He advocated to slough of Mas Production and toward to product individualization and customized production which should be the production model of 21 century. His proposal was adopted as the base theory of EURATEX in EU. The catchphrase is "***Slough of (Escape from) commodity and toward to customized production***"¹⁶.

That sentence were adopted as the base theory of 'Industry 4.0' in Germany and it will be able to make it happen, using the evolution of IoT x AI x Robot.

6) Lean

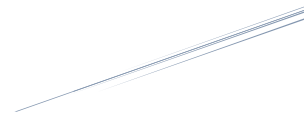
This concept is also, like as TPS, a theory. But really it is not a Theory, or yes is it? Has it peculiar Theory? Philosophy? Concept? So, what is Lean?

Anyway it hasn't original tools to realize the theory. However, this word will remain, because of the good sound which is better than 'Slim'. Long days ago I used the word of 'Slim Management' which targeted small inventory and slim organization.

Lean has no originality and no development in the composed techniques which are only a copy of classic TPS (Toyota Production System). Moreover, the concept also sounds too much natural, like as religious mantra, In spite of the fact of 'lean' is better sound than 'slim', and I like this sound.

¹⁵ **Six-Sigma & Statistical Analysis:** Sigma-XL: <https://en.wikipedia.org/wiki/SigmaXL> NextSigma: <http://www.nextsigma.com/> Minitab: <https://es.wikipedia.org/wiki/Minitab> GNU PSPP: (FREE) <http://www.gnu.org/software/pspp/>

¹⁶ **Escape from the Commodity Trap:** Will the Production Transformation Sustain Productivity, Growth and Jobs? <http://brie.berkeley.edu/publications/Escape4Distribution.pdf>



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VII. Vision (& II)

Now, I suppose you question me, why did I describe the technical trend in the column of Vision at length? Because I wanted to tell following things.

1. **A Vision and the Strategy are like "two side of one coin".**
2. **And Vision cannot exist if there are no Strategy.**

Therefore it is required to make both vision and the strategy at the same time.

In order to build an Strategy and also a Vision, it is essential to understand the trends which are, of course not only the technical issues, but also the products market, labour market, politics, etc.

Such 'Industrie 4.0' world will come so quickly? I don't tell you the span of 1 or 2 years, but the span of one decay. So, I don't tell this story in exaggerated. But within one decay a gemba will change dramatically. Therefore I'm recommending to review your Vision & Strategy, if these are still on the extension line until now.



For getting your good understanding and incidentally I introduce the movement of the world.

2 years before, in August of 2015, I read an interesting newspaper regarding 'Industrie 4.0' and future factory. This newspaper introduces the prediction of Mr. Emmanuel Todd¹⁷ and he said that German, USA and China will form the industrial Three-poles structure and, as to back up his words, German has already began the activity of 'Industrie 4.0'.

When CeBIT¹⁸ 2014 was held in Hanover, German Prime Minister Angela D. Merkel and former Prime Minister David W. Cameron visited it and she highlighted the national project of Industry 4.0. German already started the national project of Industry 4.0. Which itself is the meaning of

¹⁷ Emmanuel Todd: Scholars of Historical and Anthropology
https://en.wikipedia.org/wiki/Emmanuel_Todd

¹⁸ CEBIT: Centrum für Büroautomation, Informationstechnologie und Telekommunikation
<https://en.wikipedia.org/wiki/CeBIT>

the 4th Industrial Renovation at 2011. As I wrote, USA also began similar activity so called 'Industrial Internet'.

How about Japan? Of course it has been started. I describe the background of Japan later. So, Japan needs to accelerate this, because of very serious social background.

Once again Mr. Emmanuel Todd predicted the industrial Three-poles structure of German, USA and China. But, How about China and why China?

1) The 3rd Pole: China

Chinese government published the vision & strategy of "Made in China 2025"¹⁹ at 2015. And the top of Industrial & Information Technology Department Mr. Feng Fei announced this Vision & Strategy as follow.

"Made in China 2025" is the new concept regarding industry development which was adopted in the government report of this year (2015).

Concretely, in 10 years from now, China leaps in planning the change from the current production power to superpower;

1. **by accelerating the deep level fusion of industry and information technology;**
2. **by using the network & digital & making smart technologies;**
3. **by forestalling in the area of industrial importance.**

And "Made in China 2025" is actually Chinese Industrial 4.0 and the commanding heights is Industrial Internet of USA. However, the name of department Industrial & Information Technology Department is uncertain by myself.

And following items were nominated as 10 important areas: Next-generation information technology, High-level CNC machine tools and Robots, Aerospace facilities, Marine engineering facilities and High-tech vessels, Advanced orbital transportation equipment, Energy saving / new energy vehicles, Electric power equipment, New materials, Biomedicine and high performance Medical equipment, Agricultural machinery equipment.

Then, the main strategies are 3 areas which are:

1. **Special Economic Zone (Shenzhen and other ones new)**
2. **Venture Industries and;**
3. **Corporate acquisition.**

¹⁹ **Made in China 2025:** <http://knowledge.ckgsb.edu.cn/2015/09/02/technology/made-in-china-2025-a-new-era-for-chinese-manufacturing/>

Special Economic Zone

Shenzhen Hi-tech Industry Park. When I engaged in the job of previous company, I have visited this city in 1999. Now this city underwent a remarkable industrial base after the nomination of special economic zone at 1979 by Deng Xiaoping.



20

The most remarkable thing which I'm surprised is the book store²¹. It is a bookstore, shown in the next page picture, which claims to be the largest in the world. Floor space; 42,000 m². Bookstore sited in Toronto Canada was the biggest: 5,946 m². Here is now the base of knowledge and support the vision & strategy from the flank. Now here is called as the Chinese Silicon Valley and provides all necessary things for developing industries.

²⁰ Picture of ZTE Shenzhen By Brücke-Osteuropa (Own work) [Public domain], via Wikimedia Commons: https://commons.wikimedia.org/wiki/File:ZTE_Shenzhen.JPG

²¹ Shenzhen Book City: https://en.wikipedia.org/wiki/Shenzhen_Book_City



Above picture The Shenzhen Book City.

Picture on the left, it is the Venture support building in the Shenzhen Hi-tech Industry Park.

Venture industries

In the Shenzhen Hi-tech Industry Park, there is a venture support building which the name is "Overseas Chinese Scholars Venture Building". Chinese Government gives and provides not only the infrastructure, but also the conveniences to the ventures which are entrepreneurs of studying abroad. For instance the office-rent is $\frac{1}{4}$ in general. Now (so far) about 300 thousand venture companies are counted. This number is 4 times in these 5 years.

Yes, one of strategy of China is to support and cultivate such venture industries. But it is not possible to wait the growth of Chinese own technique. Then, the resources are the return home international students, mainly from USA.

Corporate Acquisition.

In above I described the 2nd strategy. However, it doesn't allow to wait until the young venture companies to grow up, because "Made in China 2025" targets above goals up to 2025.

Then, China takes the 3rd strategy which is the corporate acquisition. Let's look at one case.

Last year 2016, I was surprised with one news. A Chinese company who is Midea, purchased a German company which the name is KUKA.



KUKA, as a core company of Industry 4.0, Prime Minister Merkel visited and made the speech and appealed the importance of this national project.

KUKA company was purchased at June 2016 by Midea²²

²² Midea: <http://www.midea.com/global/> Kuka acquisition Midea corporate press note: http://www.midea.com/global/about_midea/News/201701/t20170117_207407.shtml

This old company established at 1898 is the company of industrial robot and is the 2nd share after FANUC Corporation in the world.

Some time ago, I have introduced Midea group in Factory Management-1, and this company purchased one of the parts of TOSHIBA, the Home Electric Appliances department.

At this case, I wasn't surprised, because such labour-intensive and commodity industry to be transferred to cheap-labour country is quite inevitable result. But robot industry is different, moreover KUKA is the core company of Industry 4.0 which includes more than 6,000 companies participating in Germany.

In the contract of purchase, there is a related article which such customers secret information must be kept to Midea for 7.5 years, about the end of 2023. However, It is indeed, German is generous.

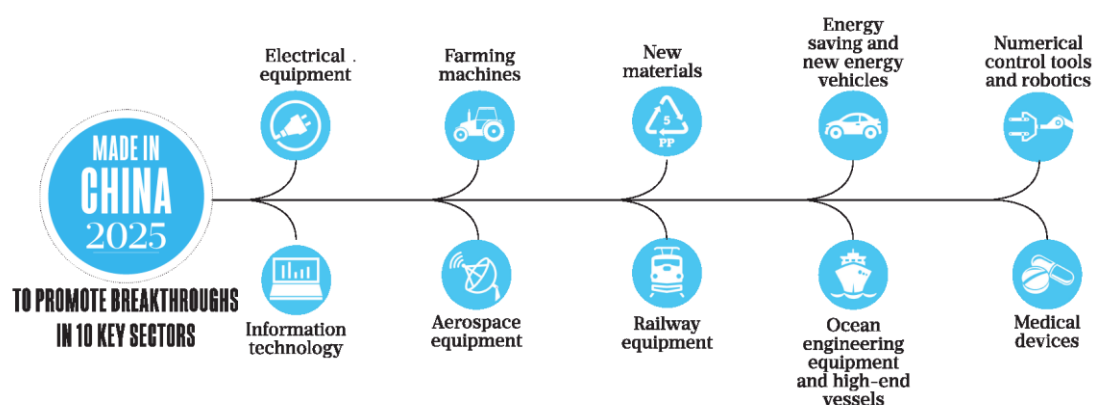


On the left picture, BMW Welding line with KUKA robots.

Such industrial robot is like a custom-made.

And this company has many clients such BMW, VW and others and also their secret information.

Midea, this young company. It was born in 1968 and has entered to the business of industrial robot since 2015. Now this company purchased 2nd share market robot maker KUKA. Now in China there are more than 1,000 companies of robot maker, if including the small-scale Enterprises. As you understand the 3rd strategy of China is corporate acquisition to achieve the goal of Made in China 2025.



2) What about the Japan's Pole?

Incidentally, I would introduce the situation of Japan. Because the standing position of Japan is more serious.

Recently a shocking news was presented by Japanese Ministry of Health, Labour and Welfare and was regarding the decrease of population. Population estimated at the timing of 2053 year will be 88 million, which will be 30% less than 2015. Moreover the serious problem is the decrease of working population which will decrease 40%. 40% decrease from the point of 2015 at 2053 year.

Please look at next graph which was presented by Japanese Ministry of Economy, Trade and Industry.



¥8.4M GDP/Person.
¥8.40M = \$76.4K.
¥15.1M = \$137.4K.

Decrease of 7.35
million working
population at the
timing of 2030.

Target to increase
the GDP from 5,200
Billion\$ to 8,500
Billion\$.

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Ministry of Economy, Trade, and Industry presented the "Vision of New Industrial Structure" at the 4th June 2016 and above graph.

²³ GDP: GDP/Person. Gross Domestic Product per person.
https://en.wikipedia.org/wiki/Gross_domestic_product

The Ministry predicts the decrease of the working population of 7.35million from 63.34million at 2015 to 55.99million at 2030 (about 47% decrease) if the current condition will be continued. And the Ministry intends to increase the GDP (Gross Domestic Product) of 60% from 5.2 Thousand Billion\$ to 8.5 Thousand Billion\$ in the acceleration of "4th Industrial Revolution" Same to Industry 4.0.

In parallel Government has begun the reformation of workstyle. If people continue the current work style, it will become to be difficult to gain jobs, because of the mismatching of the needs to labor capacity.

As you know Japan now is accelerating the trend of the society of "decreasing birthrate and aging of the population". Because of the increase of aging population, Japan needs to spend the national expense of 31.5 Thousand Billion Yen (at 2015) 6% of GDP. Therefore it is required the growth of GDP.

By the way, a recently very interesting joint survey was made by The Nikkei²⁴ (One of Japanese major newspaper) and UK Financial Times²⁵ regarding the available business and industry types to be replaced by Robot with AI.

According to this survey, the human work of 55% can be replaced with robot & AI. That is the Japanese case. Also, the case of USA is 46%, EU 47%, China 51% and India 52%. According to the report of McKinsey & Company, 75% of engine assembly which has 77kinds of works can be in the automation process. Also actually General Motors has 30 thousand robots. And 8,500 robots has AI and sensors for monitoring the operating situation and the symptoms of a machine problem.

But the ability of complete replacement by robot & AI will be 5% of total work type within one decay. Of course, this percentage will increase much more within 2 decays.

Anyway, Japan needs to increase the productive capacity in 4th Industrial Revolution within these 10 years. But actually there is more serious country than Japan and it is China.

Really is there a problem of working population in China, when China has 13 Hundred million population? Yes, really it is a problem. Really any industries in China have the problem of getting workers because of the rising wages. Additionally, the aging population is rising very rapidly, also the long years of One-Child Policy²⁶ amplifies the problem.

²⁴ **The Nikei:** formally known as The Nihon Keizai Shinbun (Japan Economics Newspaper)
https://en.wikipedia.org/wiki/The_Nikkei

²⁵ **The Financial Times (FT):** https://en.wikipedia.org/wiki/Financial_Times The FT is owned by The Nikei.

²⁶ **The One-child Policy:** It was introduced in 1979 and began to be formally phased out in 2015.
https://en.wikipedia.org/wiki/One-child_policy

When I was in Argentina, I lectured China as World Factory and explained the "**Nou-Min-Kou**" which is the migrant worker from the agricultural district at 2012.

Nou-Min: Farmer. **Kou:** worker.

And I have explained the capacity of **Nou-Min-Kou** of 270 million at 2015. However, the word of **Nou-Min-Kou** is now an obsolete word and China has changed the strategy dramatically. Then, the Chinese government needs to take the countermeasures very seriously.

I have written that Japan is in the society of decreasing birthrate and aging of the population. However, China will have the same problem of 'Aging population' very rapidly before building the necessary social and economic structure and one of the keys to the vision and the strategy to resolve social condition will be by means of "Industrie 4.0".

By the way, I am a worrywart. The anxious point of China is the social unrest in income gaps.

The income gaps will grow in "Made in China 2025" which requires the specialists, such Operational Techniques, and programmer in IT. And the ordinal labour-intensive industry which creates much employment and requires cheap labor will be reduced in China.

Made in China 2025 or Industry 4.0, creates many jobs. However, it involves the contradiction. Because it has the characteristic of labour-saving or depriving job. Therefore, China requires the structural reform in the intellectual job.

Is the trend of such Industry 4.0 an unrelated example to your country? Yes, and any country has the very rapid influence. Unexpectedly, it will not take a long time before it becomes widespread in the emerging countries, particularly than the developed countries. That is because of the developed countries have to renew from the current infrastructure. It is the meaning of taking times, on the other hand, the emerging countries can introduce new trend like as the use of the smartphone in the Africa which hadn't the infrastructure of cable telephone.

Perhaps within only a few years, the trend of Industry 4.0 will become the de facto, the standard of the industry.

Please, understand that the time is flowing very rapidly.

3) My strategy

Now for your reference, I describe my vision and strategy. I already described my 10 years vision in above. Then, in here I describe the strategy.

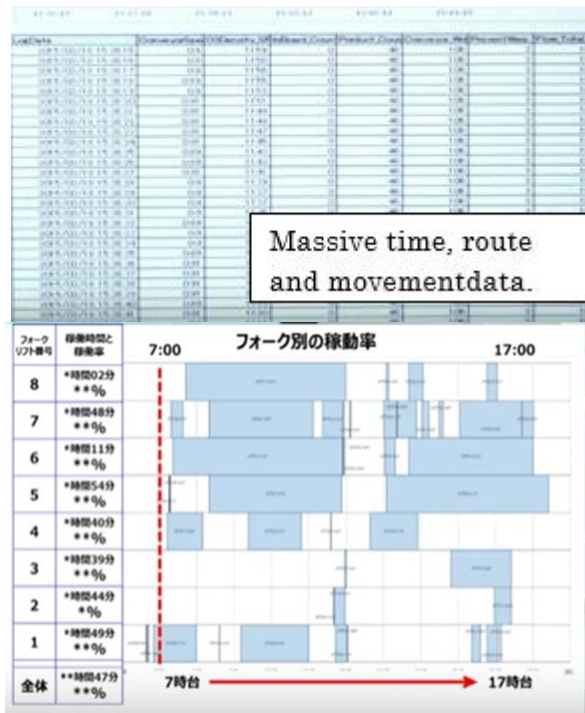


I think the time of strange name IoT to become popular in Japan was the end of 2015. Then I listened to the opinion of my son who is an engineer of IT and learned the ability of IoT. And I felt the destructive capability of IoT in near future to my professional field.

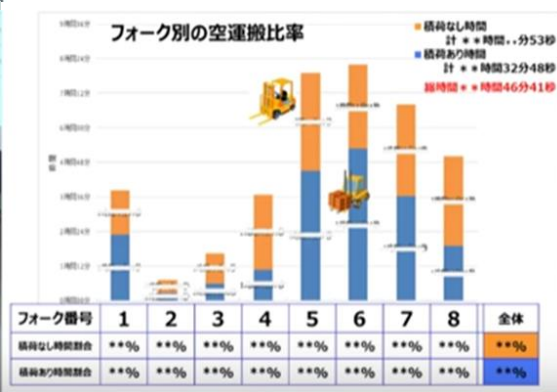
For example one of my professional fields is Industrial Engineering Techniques, including Work Design. I believed that the classical techniques are replaced to IoT used techniques.

For example. In IE there are the techniques of Work Sampling, Route (Process) Analysis, Time Study, Performance Analysis. These are superseded by the IoT in the combination of sensor, beacon, smartphone, iPad, tablet terminal and also the analysis equipment and edge computing system.

The assumption of some forklifts and analysis of route pass and the performance. Initially, to gather data, an Industrial Engineer was required to chase and record the route in several days. But now, it is possible to gather data and analysis with IoT.



Some examples of automatic analysis and visualization from the massive data.



Now a device which gathers data and analysis combined with Excel has come on the market.

Work Sampling for the analysis of movement by industrial engineer? No necessary.

Machine performance analysis by IE engineer? No, also not necessary. It is possible to gather data and analysis and visualize automatically and real time.

One of my professional field is TQM, and when teaching TQM I show the importance of QRQC (Quick Response Quality Control). When the concept of QRQC is to find the solution mean 'Visiting the Gemba and Looking at the Truth immediately, using very fresh data'.

Conventional QC (Quality Control) is based on the gathering statistic data taught by Dr. Deming. However, the system based on statistic data has a weak point. The statistical data is required to categorize because there are so many varieties of phenomena.

For instance a defect of crack in the workpiece. The phenomena is "crack". But the assumption causes are so many or still unknown. So, it is not realistic to take action only based on assumptions. Then, using QC it is recommended to gather data as much as possible in categorized and minimized the assumptions. But unfortunately, the probability is as next:

The phenomena; Crack in workpiece.

Assumption categorized; Deformation of the parts.

Analysis in Fish-Bone (including 5Why); Deformation of the parts by pressure in previous process or deformation by the process or parts material defect or etc.

Anyway, it is required to take an action in the assumption. It is not bad. But unfortunately, the solution also is supported by still the assumption.

I taught that nobody can see the true causes because nobody has the time machine to go back to the passed time to see, like as the old movie of "Go Back to the Future".

Therefore I taught and recommend QRQC to get very fresh data to close to the truth.

But now it is possible to see the truth in IoT in real time. In installing the cheap sensors in the machine and processes, it is possible to gain the necessary data. If you like, it is a good idea to put video in the main machine and process, it is possible to see the trouble cause. When the sensor perceives an abnormality, the image of video before and after 5 minutes is kept automatically. So QC approach also is changing. For telling the changing professional approach, I made above long talk.

Now my additional strategic items.

ONE: Getting a "young" partner who is the professional of IT. Why young? Because Old person is thick-headed.

TWO: Teaching Industrial Engineering and Factory Management combined with IoT & AI. I Omit the detail items and the time schedule.

Again, why do I write the trend of Industrie 4.0?

1. It is necessary to review and revise or to make Vision because of dramatic change within these next 10 years.
2. Vision needs to have certain Strategy.
3. For Vision & Strategy, it is essential to investigate the industrial trend & situation.

Do you remember the conversation with some chinese friends and their question? In the last edition, I described regarding China based on the question of Chinese friends. And the theme was.

1. Development of the excellence of Chinese Company.
2. Additionally, why China cannot gain the Nobel Prize in the field of natural science?.

Incidentally, I introduce my answer to them. I have no concern about the "Excellence of Chinese Company" to come to the world. Now there are some worldwide companies in the size of business.

Of course, the condition of an excellent company is not just the size of the business and the profits. The conditions of excellent company are:

1. **Continuous profit;**
2. **3S;**
3. **Corporate governance and Vision & Strategy based on the Corporate Philosophy.**

And as you understand, the long life span is the result.

There is one remarkable company which I'm interested in. It is Huawei Technologies established at 1987 by Mr. Ren Zhengfei. It is still very young, but It was nominated as the 5th place of Most Innovative Company Ranking at 2010 by the "Fast Company" which is the famous business magazine of USA when 1st to 4th were USA companies and they were Facebook, Amazon, Apple and Google. Additionally, Huawei was nominated as 15th in 50 of Innovative Company at 2017.

Why? Why I have an interesting in this company? Of course, this company is innovative. But my interesting points are different and 3 specific points.

ONE: It is a Holding company by the employees and the share of Mr. Ren Zhengfei is only 1.8%. The purpose is to seek the "Management by all".

TWO: it is the rotation of 3 CEOs system to avoid the charisma.

THREE: it is the mobile strategy.

Shenzhen Hi-tech Industry Park, Midea, Huawei, etc. such young companies and national strategies are effective.



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Therefore, there may not be the concern about the "Excellence of Chinese Company".

Initially the Chinese products are cheap but bad quality. However, Chinese government made and is taking his new vision and strategy which is so called 'Made in China 2025'.

But about the 2nd question Nobel Prize in the field of natural science may not possible to resolve in the current background.

VIII. Summary

I explained the coming of new industrial age. But even the new industrial age in IoT & AI & Robot, these machines and processes are not a god and almighty. It is required the participation of person which has the skill of "Operational Technique".

Even though a smart machine which has the functions of self-thinking in IoT & AI, to use it is people. Then it is a person to think how to use smart machine in the production and the production system designing.

Then in your vision, you shouldn't forget the cultivation of human resources in the area of Operational Technique which includes the analysis & use of big data and also the programing.

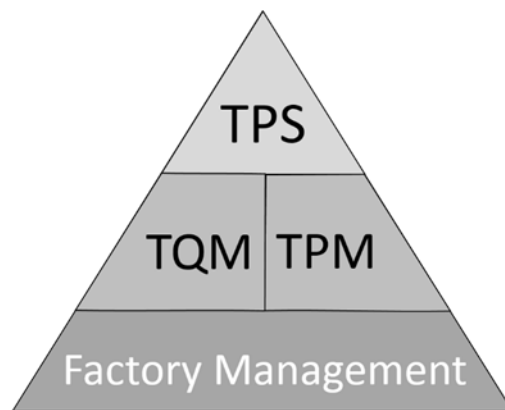
²⁷ Huawei Headquarters: <http://www.huawei.com/za/about-huawei/newsroom/photos/>

IX. Next Lecture

From next description, I would describe TPM (Total Preventive, Productive Maintenance).

Though I describe TPM, the description of Factory Management hasn't been finished. In the story of TPM, the necessary information of Factory Management will be interlaced.

Do you remember the next picture?



TPS (Total Productive System), TQM and TPM are so called 3Ms for strong industrial management. And these 3Ms is supported by certain factory management.

As you know Total Productive Maintenance is constituted of 8 pillars:

1. Focused Improvement
2. Autonomous maintenance
3. Planned Maintenance
4. Quality maintenance
5. Cost Deployment
6. Early Equipment Management
7. Training and Education
8. Safety Health Environment

And this is possible to be said as Total Preventive Maintenance based on Factory Management.

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Budget Implementation Sheet V 1.1

Budget	2011	Month -1				Month 0 -Present Month-				Month +1			
Quarter	1..4	Annual	Actual			Annual	Actual			Annual	Actual		
Article	XXXXX	Plan	Plan	Outcome	Forecast	Plan	Plan	Outcome	Forecast	Plan	Plan	Outcome	Forecast
Sales &	KMH												
Production	Sum												
Total Cost													
Gross Profit	Sum												
	Gross Profit Rate												
Direct Cost	Workforce												
	Efficiency												
	Raw Material												
	Scrap												
	Scrap Rate												
	TOTAL												
Indirect cost	Depreciation												
	Workforce												
	Equipment Cost												
	Transport												
	Other expenses												
	TOTAL												
Sales Dirc.Cost	Workforce												
	Equipment Cost												
	Transport												
	Other expenses												
	TOTAL												
Indirect cost	Headquarter												
	Other expenses												
	TOTAL												
Profits Before Taxes													

· This table is the first sheet of material to be taken to the Management Committee meeting.
· The rest of the sheets that follow this first sheet are diagrams and graphs of each Activity and KPI.

Leftware

Original Technology	PM	KAIZEN	Quality Assurance System	Motivation	Standardization	Material Control	Quantitative Ordering System	Production Plan	Sales Management	Cost Control	Gemba Organization	Budget control	Daily Control	Policy Statement
Process Analysis	PM Autonomous	Suggestion Scheme	QC	Safety Control	Abnormality Control	Machine Control	Periodic Ordering System	Production Control	Purchase Management	Cost each Product	Action Plan	Meeting System	Data Gathering	Policy Control
Work Sampling	SMED	Group Activity	QC 7 tools	QC Process Diagram	Training & Education Control	Gemba Visit	SCM Safety & TPS	Progress Control	MRP	Standard-Cost vs Actual Cost	Committee Activity	WAIYAGA	KPI	Target Control
Performance Analysis	TPM & TPM	QC Circle	Inspection system	TQM Diagnosis	Skills Control	Inspect support	Logistics	Delivery Control	ERP	Efficiency Control	Project Management	Accounting support	5S & 4R	Visual Control
Time Study	Machine Management	Safety & TPS	System Diagram	Factory Diagnosis	Evaluation Criteria	ISO9000 ISO9001	ABC Analysis	Inventory Control		6Sigma			IoT	
Standard Time	Work Design	TPS	Function Deployment	TQM	Smart Factory	HACCP								
Line Balance	Purpose Deployment	Heijunka	FMEA	Potential Problems Map	Knowledge Management	GMP & ICHQ								
Cell/Line & Production	Ideal System	Kanban	QA Matrix	Process Mapping		ISO22000								
Man-Machine Diagram	Process Design	TOC	QCPC											
	Lay-Out	QRQC QRKA												
	Industrial Engineering	Jishu-Ken												

← Leftware - Production Tech & Tools

→ Leftware - Management Techniques

- Gemba Ryoku
- Trust
- Corporate Culture
- Vision
- Corporate Philosophy

Corporate Constitution

3S Condition